ABSTRACT

A terahertz (THz) frequency radiation source to emit radiation in a narrow wavelength band within a range of about 3 μm to 3000 μm. This source includes: a broad bandwidth emitter to generate a broad bandwidth emitted wavelength band within the wavelength range; a first planar waveguide optically coupled to the broad bandwidth emitter to transmit the broad bandwidth radiation; a disk resonator evanescently coupled to the first planar waveguide with a resonance wavelength band within the emitted wavelength band; and a second planar waveguide evanescently coupled to the disk resonator to transmit radiation in the narrow wavelength band. The emitted wavelength band has a bandwidth greater than or equal to about .01 times a mid-band wavelength. The resonance wavelength band has a resonance wavelength bandwidth of less than or equal to about .25 times the emitted bandwidth. The narrow wavelength band is substantially equal to the resonance wavelength band.